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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,264	10/09/2003	Rem M. Lazarenko-Manevich	LAZARENKO4	5984
1444 7590 06/04/2007 BROWDY AND NEIMARK, P.L.L.C. 624 NINTH STREET, NW SUITE 300 WASHINGTON, DC 20001-5303			EXAMINER SODERQUIST, ARLEN	
			ART UNIT 1743	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/681,264

Applicant(s)

LAZARENKO-MANEVICH ET AL.

Examiner

Arlen Soderquist

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                               | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                      | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

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1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In claim 2 there is a requirement that the detection mode be synchronous with porosity at  $S < 0.5$  Ted, however there is no explanation in the instant application of what the porosity is or if the porosity is somehow related to the electrode or another element of the apparatus used to measure the SERS result. While porosity is found in the disclosure the statement is equivalent to what is found in the claim with no supporting description. Additionally, page 7 lines 4-7 have a sentence that includes an equation for the adatom concentration that both sides of the equal sign are not equivalent. Thus this appears to be missing something or the enablement of the method is clearly not present in the description. Additionally, while presenting theoretical results is not a definite sign of a lack of enablement, the fact that certain parts of the method appear to have been discussed or presented in the literature since 1980 raises a question of whether applicant has enabled the claimed invention if it can or is to be distinguished from the techniques used in the below applied art rejection.

3. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1 it is not clear if the sample is required to be placed in a silver salt solution for analysis, an electrolyte solution for analysis or the metal sensor is simply placed in the sample. For examination purposes all will be considered as within the scope of the claim. Relative to claim 2, it is not clear what has porosity and is used in the relationship listed. In claim 6 it is not clear how the interference polarizing filter is "used".

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tian (Applied Spectroscopy 1996 or Journal of Electroanalytical Chemistry and Interfacial Electrochemistry 1991, hereinafter referred to as Tian '96 and Tian '91, respectively) or Pothier in view of Dorain.

In the paper Tian '96 teaches potential-averaged surface-enhanced Raman spectroscopy. Potential-averaged surface-enhanced Raman spectroscopy (PASERS) has several advantages over SERS. A PASERS spectrum is acquired when the electrode is rapidly modulated between 2 potentials by applying a square-wave voltage. The potential-averaged SERS spectrum contains all the information on the surface species at the 2 modulated potentials, and each individual SERS spectrum can then be extracted by deconvolution. By properly choosing the 2 modulating potentials, 1 can obtain SERS spectra of surface species at electrode potentials where SERS-active sites are normally unstable. PASERS leads to a unique way of studying complex interfacial kinetic processes by controlling the voltage pulse height, frequency, and shape. The measurement of time-resolved spectra in the very low vibrational frequency region can be achieved by PASERS using a conventional scanning spectrometer with a single-channel detector. The main advantages of PASERS are illustrated by studying 2 typical SERS systems, i.e., SCN- and thiourea adsorbed at Ag electrodes, respectively. The potential-averaging method can be applied as a common method to many other existing spectroelectrochemical techniques. Tian '96 does not teach normalization of the spectra.

In the paper Tian '91 teaches potential averaged surface-enhanced Raman spectroscopy (PASERS) of thiocyanate adsorbed at silver electrodes. The new potential method in surface-enhanced Raman spectroscopy with more rapid potential modulation was used to study the

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temporal adsorption-desorption phenomena. Only one SERS spectrum was recorded, while 2 potentials of interest were modulated. The potential averaged SERS (PASERS) was employed to study the SCN<sup>-</sup> adsorption at Ag electrodes. Tian '91 does not teach normalization of the spectra.

In the paper Pothier teaches surface-enhanced Raman spectroscopy at a silver electrode as a real-time detector in flowing streams. An analytical application for surface-enhanced Raman spectroscopy (SERS) at a silver electrode is described. Real-time SER spectra of adenine and cytosine have been recorded in a 10- $\mu$ L spectroelectrochemical flow cell under flowing conditions. Charge-coupled-device detection allowed high-quality spectra spanning a  $\sim 1200\text{ cm}^{-1}$  region to be recorded with integration times of 4 seconds. A low-power He-Ne laser was used as a source. SERS at the silver electrode offers rapid time response to adsorption/desorption by appropriate potential modulation. The technique is extremely reproducible and insensitive to temperature and flow rate. The effects of incident photon energy and applied potential on the intensity of the Raman signal are discussed. Pothier does not teach normalization of the spectra.

In the report Dorain teaches surface-enhanced Raman scattering applied to surface chemical kinetics. The applications of surface-enhanced Raman scattering (SERS) to study surface chemical reaction kinetics is presently limited because the enhancement mechanisms are reaction dependent. The size and the number density of the surface roughness is dependent on the reaction parameters, such as  $\Delta H$  and temperature that are functions of time. For selected reactions, a partial solution exists if during the course of the reaction, surface reconstruction is confined to modification of the adatom structures. Electromagnetic enhancement, due to surface roughness of  $\sim 20\text{ nm}$ , is nearly constant in this case, and only the adatom enhancement mechanism is time dependent. The adatom concentration is also proportional to the background intensity due to electron-hole recombination in the metal substrate. Thus the adatom time dependence of the SERS spectra may be removed by normalization to the background in a spectral region without discrete SERS peaks. Applications to the decomposition of allynes(sic), phosphonates, and  $\text{NO}_2$  on Ag powders provide supportive evidence.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a normalization procedure as taught by Dorain in the methods of Tian '96, Tian '91 or Pothier because of the ability to remove time dependence of the Raman signal and

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produce spectra with signal proportional to the coverage of the adsorbed molecule as taught by Dorain.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited art relates to Raman spectroscopy of molecules adsorbed on metals.

7. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered. Thus, if applicant wishes to have examiner consider any of the art cited in the instant specification because it is relevant to the instantly claimed invention, it should be listed in an information disclosure statement.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (571) 272-1265. The examiner can normally be reached on Monday-Thursday and Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Arlen Soderquist  
Primary Examiner  
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